APPENDIX

NOTES FOR FOMC MEETING
MARCH 28, 1989

SAM Y. CROSS

The dollar moved lower against the major foreign currencies from the time of your last meeting through late February, then recovered in March and is now trading at levels a bit above those prevailing at the time of that last meeting. Upward pressure on the dollar intensified at times in March, and the U.S. monetary authorities intervened, selling a total of $750 million against marks.

About the time of your last meeting, dollar exchange rates started to trade with a softer tone. The loss of the dollar's upward momentum at that time seemed attributable in part to coordinated intervention that had occurred through the first week of February. The dollar then moved downward after President Bush's Congressional budget address on February 9 failed to provide new initiatives and left market participants with the view that decisive action to reduce the fiscal deficit was not likely to occur anytime soon. As optimism surrounding the new Administration began to fade, market attention turned to a more realistic assessment of economic fundamentals.

In the meantime, newly-reported data pointed to an acceleration of price increases in several major industrial countries, leading to growing concerns about inflation worldwide. Against a background of rising oil prices and some labor and capacity constraints, the attractiveness of individual currencies tended to be influenced by market assessments of the willingness of monetary authorities in particular countries to act vigorously to stem inflationary pressures in their domestic economies.

In these circumstances, the questions of inflation and monetary policy moved to center stage. When, in the United States, we saw a sharp rise in producer prices for January, followed by a merchandise trade report for December indicating strong domestic demand, some market participants began to question whether what was seen as a gradualist policy approach of the Federal Reserve would be adequate to dampen inflationary pressures. Reports of continued high inflation in the United Kingdom only seemed to underscore the view that policy makers may have underestimated the risks of inflation.

At the same time, analysts appeared to be certain that signs of robust growth and accelerating inflation in Germany would lead to a quick tightening of the Bundesbank's policy stance. This market view showed through in a significant increase in German money market interest rates. By mid-February, German banks were bidding aggressively for funds, convinced that their massive borrowing at the Lombard rate would be raised and that German money market rates would move even higher in the near future. While actual changes in interest differentials were relatively modest during mid-February, the prospect of a narrowing of favorable differentials led to further downward movements in dollar exchange rates. By February 23, the dollar had eased down to trade around its period low of DM 1.81 against the mark and Y 126 against the yen.

But, within the next few days, sentiment towards the dollar improved dramatically after the Federal Reserve moved to tighten its policy stance, first by Desk action then followed by a discount rate increase, while the Bundesbank provided clear signals that rates in Germany were not likely to be raised in the near future. That the Bundesbank was satisfied with existing rate levels came as a big surprise to the market. Soon thereafter central bank officials from several other countries expressed similar opinions. As market participants reassessed the outlook for interest rates abroad, money market rates in Germany moved down from their previous highs. At the same time, dollar interest rates were firming so that interest differentials widened in favor of the dollar and the dollar's rise gained momentum. Economic statistics released through mid-March appeared to support the view that the Federal Reserve policy stance would remain restrictive, relative to the stance of the European central banks. There has been much conjecture about the reasons behind the Bundesbank's apparent reluctance to raise rates, and market analysts point to the constraints imposed by the present situation in the European Monetary System (EMS). The exchange rate mechanism there is stretched to the limit and there is concern that a rise in German interest rates might put undue pressure on other EMS monetary authorities. In addition, Bundesbank officials have indicated that much of the sharp increase in German prices for January was due to a tax increase and not an increase in the underlying inflation which they feel remains in the 2 to 2-1/2 percent range. To tighten policy would simply dramatize these price increases and have a negative effect on inflationary expectations.

At the close of the period, the dollar remained firm. Some of its downward momentum appeared to dissipate on news that the rise in the CPI figures for February was more moderate than feared and on bits of evidence suggesting that the pace of economic growth may be slowing. However, political uncertainties in Germany and Japan have underpinned the dollar. In recent days, in particular, the market has grown more nervous about the unfolding Recruit scandal in Japan.

Mr. Chairman, I would like to request your approval of the Desk's operations during the time since your last meeting. The System's share of intervention sales of dollars, undertaken from March 8 through March 27, was $375 million dollars against marks, with an equal amount financed by the U.S. Treasury. The System also purchased $99.1 million equivalent of yen from a customer to augment Federal Reserve balances, while the U.S. Treasury also built up its yen balances through non-market purchases of $44.1 million equivalent of yen.

In other operations, on March 15, the Central Bank of Venezuela drew the full amount of a $450 million short-term financing facility provided by the U.S. Treasury through the Exchange Stabilization Fund. This followed the introduction by Venezuela's new government of a comprehensive adjustment program which included, among other things, the decontrol of exchange rates, interest rates, and most private sector prices.

FOMC NOTES
PETER D. STERNLIGHT
MARCH 28, 1989

Domestic Desk operations implemented a two-step firming of the System's policy stance during the past intermeeting period. The first step was undertaken about a week after the February meeting in reaction to increasing concerns about inflationary pressures and market skepticism about the adequacy of System responses. It saw Federal funds move up to about 9 1/4 - 3/8 percent from the 9 to 9 1/8 range prevailing around the time of the meeting. In terms of reserve path construction, the move was indexed by a $100 million increase in the borrowing allowance to $700 million--although both before and after the move we were regarding path borrowing levels with considerable flexibility in view of the persisting tendency for banks to use the window less, at given rate spreads, than past relationships would have suggested.

By late February, the accumulating evidence of continuing strength in the economy and further signs of increased price pressure called for additional firming action under the Committee's asymmetric directive. Initially, it was contemplated that this would be achieved through a further $100 million rise in the indexed level of borrowing and an accompanying 1/4 percent increase in expected funds rates. These decisions, however, were swiftly overtaken by the Board of Governors' action on February 24, approving a 1/2 percent increase in Reserve Bank discount rates to 7 percent. In light of that decision, the path level of borrowing was retained at $700 million, with the expectation that Federal funds would trade roughly in the area of 9 3/4 percent.

While funds trading levels gravitated (or perhaps I should say "levitated") quickly to about the expected range, actual levels of borrowing continued to run well short of the path allowance. As this discrepancy persisted, we found ourselves, increasingly, making allowances for the lower level of borrowing in the day-to-day planning and execution of Desk operations. In order to come closer to reality in planning reserve operations, a downward technical adjustment of $200 million in the borrowing allowance--to a level of $500 million--was undertaken following the March 8 reserve period, with the expectation that funds would remain in the neighborhood of 9 3/4 percent. Even following this adjustment we have continued to regard the borrowing level with some uncertainty and flexibility--but the range of discrepancy has narrowed appreciably. Indeed, for the three full reserve periods since the February meeting, seasonal and adjustment borrowing has averaged about $450 million. Incidentally, that included some rise in seasonal borrowing over the period, to recent levels around $150 million. Federal funds averaged 9.33 percent in the first maintenance period and then 9.81 and 9.85 percent in the next two periods that essentially followed the discount rate change. These levels compare with a 9.06 percent average in the previous intermeeting interval. For the first few days of the current reserve period, borrowings averaged about $600 million and funds around 9.9 percent.

The broad monetary aggregates turned in a subdued growth performance in February and March, broadly in line with expectations voiced at the last meeting. Folding in the small decline in January, growth in M2 from December to March was at an annual rate of only about 1 1/2 percent, while M3 grew at an estimated 3 1/2-3 3/4 percent rate over this period. The March levels are estimated to be a little below or a little above the lower bounds of their annual growth cones. With its steep decline in January and fairly flat performance in February and March, M1 declined at an estimated 1 1/2 percent rate over the quarter.

Early in the period, the Desk was still engaged in its typical seasonal reserve-draining operations, offsetting the release of reserves from various market factors. Over about the first third of the period, outright holdings of Treasury issues were reduced by nearly $ 1 billion through a combination of bill redemptions and sales of bills and notes to foreign accounts. At the same time, there were substantial temporary reserve draining operations through matched sale-purchase transactions in the market. For the balance of the period, the Desk made modest reserve adjustments, mostly in the form of temporary injections through customer repurchase agreements, although one small additional matched-sale operation was undertaken in the market on March 8. On a number of days, it was possible to refrain from any market action.

Interest rates climbed across a broad front during the period, reflecting a combination of concerns about rising inflation and actual and anticipated policy firming, paradoxically intermixed at times with worries that policy was not responding with sufficient vigor to the inflation threat. The economy was seen as having entered 1989 with a good head of steam, though some of the data becoming available during the period suggested the possibility of some slackening in momentum. Market participants were particularly upset by the strong reported increases in producer prices for January and February, and consumer prices for January. February's CPI was not as bad as had been feared, although commentators were quick to point out that oil price increases in March were likely to exert upward pressure on indexes yet to be reported. While the February employment report remained quite strong, some other broad measures of activity such as retail sales, housing starts and new orders for durables hinted at abatement.

Just after the last meeting, when it appeared that there was no immediate change in policy even though many observers felt the underlying situation called for some firming, the dollar weakened and bond prices also gave ground. On the other hand, the subsequent policy firming moves brought no great rebound, in part because some criticized the moves as "too little too late." Even the discount rate rise inspired some to comment that the rise should have been more--though one would have been hard pressed to find evidence beforehand of market anticipations of a larger move. Meantime, the actual firming moves exerted an upward influence on funds and other short-term rates. Late in the interval, yields retreated a bit, chiefly on the more mixed business indicators and on comments by officials noting that recent price measures seemed to exaggerate the underlying inflation rate and that there had been little time as yet for the economy to react to firming moves already undertaken.

Among the largest net advances in rates were those in private short-term instruments such as CDs and commercial paper, which rose close to a full percentage point, or somewhat more than the rise of about 3/4 percent for Federal funds. In addition to the rise in overnight funds, it appeared that these money market rates were partly driven by bank efforts to fund credit demands, particularly for LBO financings. There were also reports of active rate hedging strategies employing sales of Eurodollar futures. Meantime, banks raised their prime rates a full percentage point, in two steps.

Treasury bills rose a more moderate 50-55 basis points or so. The Treasury raised no new money in bills, and supplies were taken up by sustained heavy purchases by individuals, especially through noncompetitive auction bids. In yesterday's sale, 3- and 6-month bills were auctioned at 9.10 and 9.12 percent respectively, compared with 8.57 and 8.53 percent just before the last meeting. (The coupon equivalent yields on the newly auctioned bills were 9.44 and 9.69 percent.)

In the Treasury coupon market, yields rose about 40 to 60 basis points, with the larger increases registered for shorter maturities. Counting the quarterly refunding, for which auctions were underway at the time of the last meeting, the Treasury raised about $21 billion through coupon issues during the period. The 30-year bond sold in a lackluster auction the day after the last meeting at an average yield of 8.91 percent, and reached a yield as high as 9.34 percent during the period before closing at 9.22 yesterday. A new 2-year note will be sold today, with auction talk around 9.85 percent. This compares with yields of 9.49 percent for this maturity a month ago and 9.08 percent a month before that.

Rates on some Federally sponsored agency issues backed up more than those on Treasury issues, particularly reflecting the wider spreads needed to place recent large issues of Federal Home Loan Bank securities. The FHLB's have had to make record size trips to the market in recent months to fund the advances to thrifts faced with large deposit outflows. The last FHLB offering needed spreads about 20 to 50 basis points wider than a month earlier. The widening seems to be largely a function of the big volume of issuance rather than a questioning of the FHLB's creditworthiness--though a few observers cite both factors. Secondary market spreads on FICO issues have remained narrow--in the area of 55 basis points.

Corporate bond issuance picked up, with a notable increase in relatively short-term (one year or so) high grade issues, which investors are apparently ready to accept without special protections for "event risk." The bulge in issuance, much of it used to pay down commercial paper, seemed to reflect views that short-term rates will climb further in the months ahead.

More generally, there is a widespread view among financial market participants that, given the perceived recent strengthening of inflationary momentum, rate increases have further to go. There is a division, though, as to the anticipated size and duration of such a move, largely dependent on views about the strength of the economy. Some see only a moderate further rise of perhaps 1/2 percent, quite possibly followed by a softening of rates as early as the second half of this year, along with a pronounced slowdown in the economy's growth. Others anticipate a larger and longer lasting rate rise, though many of these observers also expect some moderation in the economy's pace to perhaps a 2 percent growth range. It would be hard to find any one in the market with a rate outlook similar to that assumed in the Administration's budget estimates--and in general the ongoing budget discussions are regarded with skepticism or cynicism.

Recommendations on Leeway

Mr. Chairman, for the upcoming intermeeting period, current projections suggest a maximum reserve need on the order of about $7-8 billion. The main factors are increased currency in circulation, higher required reserves, and by early May some rise in Treasury balances at the Fed. While some of this can be met with repurchase agreements, which do not count against leeway, I believe it would be prudent to enlarge the standard $6 billion intermeeting leeway temporarily by $2 billion to $8 billion.

MICHAEL J. PRELL
MARCH 28, 1989

FOMC Briefing -- Domestic Economic Outlook

As you know, our recent forecasts have pointed to a slowing in the pace of economic expansion during the first half of 1989. But it is not until later this year that growth has been projected to slow sufficiently to begin easing pressures on labor and capital resources, thereby setting the stage for a topping out of inflation in 1990.

We have read the incoming information since the last Committee meeting as being broadly consistent with this scenario. As such, the data have reinforced our view that the pattern now unfolding may not qualify as a perfect "soft landing." Specifically, although we may be on a gradual descent in terms of real growth, it is looking more and more like we've overshot the full employment runway and that we'll need to do some backing up if inflation is to be contained.

Even with due allowance for the transitory nature of recent price increases for tomatoes and some other commodities, the latest inflation news has been disturbing. The producer price index, excluding food and energy, rose an average of 1/2 percent per month in January and February, and the CPI, again ex food and energy, rose almost as much. As a consequence, our projection of the first-quarter increase in this component of the CPI has been raised from 4-3/4 to 5-1/4 percent, at an annual rate.

But, we probably should not ignore recent developments in the food and energy sectors entirely in assessing the overall outlook for inflation in the months ahead. As Ted will be discussing, the international oil market has been tighter than we had anticipated; in addition to the higher cost of crude oil that has resulted, there is the possibility that gasoline prices will be boosted temporarily this summer by more stringent pollution control standards in the Northeast. Thus, while we've raised our energy price forecast for the year only a fraction, the near-term prospect is considerably less favorable than we thought before.

Meanwhile, on the agricultural front, the recent price indexes have shown larger increases than we expected for a wide range of processed foods, possibly signalling pressures from labor costs and from a variety of packaging and marketing expenses. Prospects for this year's crops obviously are uncertain, but without yet changing our assumption of normal yields, we still have felt it appropriate to mark up our forecast of consumer food inflation for 1989 by a percentage point, to about 4-3/4 percent.

All told, inflation this year, as measured by the overall CPI, now looks more likely to be a bit **more** than 5 percent, rather than a bit less, as we had projected last month.

As for real activity, the news has been mixed. This probably is to be expected during a period when output growth is slowing toward a rate in the vicinity of the underlying trend of potential GNP. Whether, in fact, such a slowing has occurred, it probably is too early to judge with confidence. Certainly, we could have been burned in the past couple of years, and occasionally were, by reading too much into a few soft monthly indicators.

We have estimated drought-adjusted GNP growth at 2-1/2 percent in the current quarter. This is somewhat less than is suggested by the January-February labor market data. Our experience has indicated that the labor market indicators often are far better predictors of GNP than are the fragmentary expenditure data; however, we have chosen to discount the employment figures somewhat, partly because of the signs that productivity improvement may be faltering. Apart from the usual pattern of deteriorating productivity when output decelerates, the anecdotal evidence of scarce supplies of high quality workers suggests that efficiency may be suffering as hiring proceeds apace.

Among the major expenditure categories, consumer spending appears to have weakened appreciably in the current quarter. After a 3-1/2 percent rate of increase in the fourth quarter, we have projected in the Greenbook a 2-1/2 percent gain in the first. The Commerce Department's report on February consumption, which came out on Friday, would argue for a fractionally lower number.

While we certainly expect slackening consumer demand to be a big part of the GNP deceleration later this year and in 1990, I would caution against concluding from the recent numbers that a major slowdown already is under way. First, the retail sales data upon which the Commerce estimates are partly based are subject to sizable revisions. Second, a late-year bulge in car sales boosted fourth-quarter spending and has held down first-quarter outlays. (I should note, as an important digression, that lower auto assemblies are trimming about 3/4 of a percentage point off of real GNP growth this quarter, and that drag should not be present in the next three months.) Finally, warm weather reduced heating bills in

January, and this may show through in a net negative influence on consumer spending in the current quarter that will be reversed in the period ahead. In light of these factors and the recent strong gains in employment and income, we are anticipating a bounceback in real consumer spending growth in the second quarter, to around 4 percent, and then a marked slowing later this year.

Unusual weather clearly has been a factor distorting the month-to-month movements in construction activity, too. In the residential market, declining building permits and home sales would seem to confirm that the strength in starts earlier this year was indeed the product of exceptionally warm and dry conditions. The strength in nonresidential construction put-in-place in January also was likely attributable in part to the weather, and while it may contribute to a hefty gain in real business fixed investment in the current quarter, we don't see that strength persisting.

The other, larger element of business capital spending -- equipment outlays -- also looks fairly robust in this quarter. But, while shipments of nondefense capital goods evidently rose considerably through February, orders have, on balance, been less impressive. In particular, orders for office and computing machines plunged in February, according to the confidential advance estimates. The computer figures are highly volatile, subject to big revisions, and not very reliable guides to future sales, but our sense is that this industry is not booming. Thus, despite healthy gains in orders for industrial machinery, we expect that overall equipment investment will grow less rapidly in the coming quarter.

Finally, in surveying the major categories of private spending, I would note that, outside of autos, inventories in the aggregate have continued to expand roughly in line with sales, and there are few signs at this point of overhangs that might lead to significant cutbacks in orders and production.

To sum up, then, we interpret the available information as providing tentative support for our thesis that economic activity is decelerating somewhat in the first half of this year. However, given our view that growth will have to slow considerably further and remain low for some time in order to reverse the updrift in inflation, we still think it likely that further increases in interest rates will be needed. Such increases can work their disinflationary effect through the traditional "closed economy" channels of higher borrowing costs and lower asset values, or they can exert such an influence through the "open economy" channel of firmer exchange rates and damped growth of net exports.

Ted will now discuss the external side of our forecast.

E.M.Truman
March 28, 1989

FOMC Presentation -- International Developments

Since the last FOMC meeting, data have been released on U.S. merchandise trade in December and January. Taken together, they were broadly in line with earlier staff projections, at least as far as the trade balance itself is concerned. Non-oil imports in December were considerably above our implicit estimate. They were boosted, perhaps, in part by a spurt of imports of consumer goods from the four Asian countries that lost their preferential tariff access to the U.S. market at the end of 1988. While nonagricultural exports also were somewhat higher than we had expected, the net effect on the trade balance was negative. However, for the fourth quarter, preliminary estimates of net investment income receipts were larger than we had anticipated, and as a consequence, the current account balance in the fourth quarter of 1988 essentially matched our earlier estimate.

In January, both imports and exports dropped sharply according to the preliminary figures, and with a larger decline in imports the trade deficit narrowed somewhat. However, the data could be revised substantially as a consequence of the change over to new classification systems, and the January deficit could well be revised up next month.

On balance, these data provided little basis for us to revise our earlier forecast of a small improvement in the trade and current account balances this year (in nominal and real terms) followed by more rapid improvement next year as the U.S.

economy slows. However, we have changed two underlying features of the forecast; these changes imply less improvement in our external balances both this year and next. We raised the level of oil prices especially in the near term, and we scaled back the decline in the dollar for the entire forecast period.

With respect to oil prices, the shortages induced by disruptions to production in the North Sea, Persian Gulf (Qatar) cutbacks, and now the Alaskan spill have affected supply more than we had anticipated. At the same time, OPEC has managed to hold its November agreement limiting production more or less intact, and reports persist about stepped up demand in the industrial countries. As a consequence, oil prices have moved up further on the spot markets to around $20 per barrel. This is somewhat above the level that would be consistent with our earlier assumption of an average price for U.S. imports of petroleum and products of $15.00 per barrel.

We continue to believe that medium-term supply and demand conditions in the market for crude petroleum make it reasonable to assume that spot prices will decline in due course. However, we are now assuming that the average price of U.S. oil imports will settle in at $15.50 per barrel and that we will approach that somewhat higher average price from above rather than from below, reaching it by mid-year. On balance, the modification of our assumption about the price of U.S. oil imports has added about $2 billion per year to our estimates of the U.S. trade and current account deficits this year and next.

Turning to the dollar, it has been evident that the dollar has been supported quite well on balance over the past year or so by the reality and the perception that Federal Reserve policy will be relatively tight and is likely to become tighter. Therefore, for the near term, while U.S. interest rates continue to move up in the staff forecast, we are projecting that the dollar will remain firm. It drifts off a bit during the second half of 1989 and is projected to decline at a faster pace as U.S. interest rates ease somewhat in 1990.

In effect, we have maintained our fundamental view that a lower dollar eventually will be a necessary aspect of achieving better balance in our external accounts, but we have put off the day when that element again comes importantly into play.

Thus, on balance, we now see the dollar averaging about 4 percent higher against the other G-10 countries' currencies over the forecast period than in the February Greenbook -- somewhat more than that in the near term, and somewhat less by the end of the forecast period. As a result, the trade balance now shows very little improvement during 1989 and only a modest improvement in 1990. The current account balance is now projected to be essentially unchanged over this year -- abstracting from the influence of capital gains and losses -- and the improvement in real net exports is smaller. The size of the partial effect of the stronger dollar on real net exports amounts to about 1/4 of a percentage point on the Q4-over-Q4 growth rates for real GNP in both 1989 and 1990; taking account of feedbacks cuts these estimates roughly in half. The implications for the external balances in nominal terms are somewhat more pronounced in 1990 than in 1989 since the relatively favorable J-curve effects this year would be reversed next year.

This revised outlook for the dollar suggests a somewhat different balance of risks in our current forecast. On the one hand, the near-term strength of the dollar would lessen both direct and indirect inflation pressures; in other words, it implies a contribution from the external side to a soft landing. On the other hand, one might argue that the risks have increased in the forecast of a greater decline of the dollar.

March 28, 1989

FOMC Briefing
Donald L. Kohn

In my briefing I will be referring to the package of charts labelled "financial indicators". As background for Committee discussion of policy options today, the charts show information on recent movements in various measures of interest rates, money supply, and other financial variables that might provide evidence on the current stance of policy and its possible effects on the economy. Before beginning it might be well to review some caveats on the use of these measures. First, the interpretation of many of them depend on unobservable variables--especially market expectations for prices, the economy, and monetary policy. Moreover, to understand how they may affect the economy, a number of these measures need to be related to long-run equilibrium values, which themselves are not directly observable and also may be shifting over time in response varying spending propensities and to the evolving structure of the economy and financial markets. Finally, caution in interpreting financial market developments would seem to be called for by the tendency for prices in these markets to vary by more than would seem to be explainable by underlying forces.

With these caveats in mind, the first chart depicts movements in the yield curve, defined in the top panel by the difference between the the rates on 30-year Treasury bonds and federal funds. Despite substantial increases in bond yields over the intermeeting period, the rise in the federal funds rate was even larger, further inverting this measure of yield curve slope. The interpretation of the yield curve is especially difficult, since the implications of particular configurations may depend on whether they are seen as signalling expected changes in real interest rates or inflation premiums and on the extent to which such expectations stem from anticipated spending behavior or monetary policy actions. Further complicating the process is the need to take account of possibly varying term or liquidity premiums.

Nonetheless, two aspects of the current yield curve seem noteworthy. First, as can be seen in the lower panel, the yield curve retains a positive slope out to about two years, which did **not** narrow materially with the recent firming of policy. The incoming data appear to have caused market participants to revise upward their estimate of how high nominal rates will need to go before pressures in the economy and prices will ease sufficiently to allow rates to drop again. Second, as is evident in the upper panel, the current limited downward slope in the overall yield curve has not in the past been a precursor of a downturn in the economy. Indeed, another point or so increase in short-term rates, as assumed in the staff forecast, even if it were not accompanied by much rise in long-term rates, would still seem to leave this indicator pointing more toward a slowing in the economic expansion than to a recession, at least judging from the pattern from the 1960s on.

The relatively mild signals about the expected impact of the current stance of policy given by the yield curve are echoed in a number of other measures that might be sensitive to changes in real interest rates and other policy variables. Commodity prices, shown in the next chart, have risen on balance over the period of tightening since last spring, and have shown no clear cut tendency to ease off after the most recent round of firming. Such a pattern is not consistent with a high level of real interest rates that made holding commodities relatively expensive and that might threaten the expansion. Stock prices, the top panel of the next chart, also have continued to advance until recently. Upward revisions to expected profits apparently have more than kept pace with increases in discount factors. Firmness in the dollar over the past year, the bottom panel, is consistent with a rise in real interest rates in the United States relative to those abroad. However, some of the relative movement may reflect declines in expected real rates abroad, especially recently when several monetary authorities surprised market participants with decisions not to tighten.

More direct measures of real interest rates in the United States are shown in the next several charts. The first updates the calculations of one-year real rates presented to the Committee in December, using a variety of price and survey data to proxy inflation expectations. Because inflation and near-term inflationary expectations have strengthened appreciably since late last year, the rise in real rates since December has been considerably less than the rise in nominal rates. Nonetheless, as can be seen most clearly in the lower two panels, these rates have risen substantially from their lows of late 1986 or early 1988, although remaining below the levels that apparently slowed demand in 1984.

One measure of the recent increase in near-term inflation expectations is given in the first column of the upper panel of the next chart.

The February survey, which was done after release of the January PPI but before that for February, shows a half-point pickup in one-year ahead inflation expectations since November to a rate 1 full point higher than a year ago. Longer-term inflation expectations have tended to trend downward, however, so that real Treasury bond yields, the lower panel, have risen, despite little net movement in nominal rates. Like the one-year real rate, the 10-year remains below earlier peaks.

The 10-year inflation expectations were also used to derive a real rate on A-rated corporate bonds, shown in the next chart. The less pronounced upward drift in this measure over the last year partly reflects a narrowing of the spread between corporate and Treasury bonds, which had widened immediately after the stock market crash. The last plot in this chart, given by the "X", is an estimate for the most recent week of around 5-1/2 percent, again, using February expectations.

The next chart relates this measure of the real rate to changes in inflation. The underlying hypothesis is that there is some level of real interest rates consistent with inflation neither accelerating nor decelerating, and that this level has not changed significantly since the late 1970s. The regression plotted in the chart suggests that the real corporate bond rate is in the neighborhood of this equilibrium value.

Behind this relationship lie two others. One is between the level of the long-term real rate and the level of output relative to the economy's potential. The other is between this so-called output gap and changes in inflation. The statistical work and recent price data suggest that the economy has moved above its potential, defined as the level of output consistent with nonaccelerating inflation. If so, and if real rates are around equilibrium levels, with no further change in real rates output growth will decelerate and unemployment and capacity utilization rates will soften to bring the economy into alignment with its potential. The inflation rate will tend to level off when the gap is closed, but not to decline from the higher levels reached in the interim. This implies a transition period of weaker economic performance and higher inflation if indeed we have moved beyond the long-run potential of the economy. An additional complication for policy could occur if evolving inflation rates proved higher than now anticipated by the market and inflation expectations were revised upward. This would imply a possible need for further increases in nominal interest rates to keep inflation from re-accelerating, even if economic expansion were temporarily weak.

The rise in nominal interest rates has had a substantial effect on another key financial indicator, the money supply. As can be seen in the next chart, growth of M2 on a four-quarter moving average basis has been between 4 and 5-1/2 percent for more than two years. Money growth over the entire period since the business cycle trough has been somewhat atypical. The bulge in money growth early in the expansion was much smaller and shorter-lived than usual, especially if one takes account of the fact that some of the observed M2 acceleration in 1983 was a result of deregulation, and is not mirrored in M3. And the more recent slowing has not been followed by a cycle peak, within the lag length established before several other turning points. The deviation from past patterns linking changes in money growth and income may be a result of a relatively cautious monetary policy through this period: that is, the experience of recent years is an important aspect of the Federal Reserve "staying ahead of the curve". Policy has tightened in advance to head off prospective inflation, even as early as the second year of expansion. As a consequence, especially in recent years, the demands for money generated by strength in nominal income and spending have been more than offset by the effects of rising market interest rates and opportunity costs. If policy had been more sluggish, both stronger nominal income and a reduced interest rate effect would have boosted money supply growth considerably.

Whether the relatively moderate money growth of recent years already presages reduced inflation pressures is difficult to determine. One tool for making such a judgment is the p-star model, shown in the last chart. That calculation still shows equilibrium prices very slightly above actual prices in the first quarter. Thus this measure, like some of the other financial indicators, gives the impression that monetary policy may have tightened about enough to stop the acceleration of inflation, but may not yet be tight enough to reduce the inflation rate. Under the staff projection of M2 growth for the year of only about 3-1/4 percent, money growth in this model would not have yet created the conditions leading to a slower rate of inflation until the second half of this year. That projection, of course, assumes the further rise in interest rates in the greenbook forecast.

Finally, Mr. Chairman, a few words about very recent and prospective money growth. The slow money growth of the first quarter needs to be interpreted with particular care because it probably was affected by the thrift situation. Deposits at S&Ls have been very weak, reflecting both administrative pressure to restrain offering rates and depositor flight. The former has held down M2 by contributing to wider opportunity costs. Many of the deposits leaving thrifts out of general concern undoubtedly have been channelled into banks and money market funds, remaining in M2. But some probably has found its way into market instruments, especially Treasury securities judging from the volume of noncompetitive tenders, which has been larger than might be expected from rate relationships alone. On the M3 level, substitution of FHLB advances for deposits at thrifts and weakness in thrift asset expansion probably held down the growth of this aggregate as well. Thrift difficulties could have an impact on the economy if they were to interfere in some basic way with the flow of credit services. We do not expect this to occur, given the competitive situation among depository institutions and the development of secondary mortgage markets. Weakness in M2 or M3 growth from the thrift troubles would not itself be an indicator of adverse consequences for the economy. Rather it should be viewed as a downward shift in money demand relative to income or spending, or an upward shift in velocity. The extent of this shift is impossible to quantify with much confidence. For the first quarter it likely is worth perhaps as much as a percentage point of M2 and M3 growth, judging from model results, noncompetitive tenders. and FHLB advances. But these modest effects may appear to take on added importance when the broad aggregates are close to or a little below the lower ends of their growth cones.

Looking ahead, the bluebook money paths incorporate some continuing weakness at thrifts feeding through to the aggregates, but less so than in the first quarter. Partly for this reason, even under alternative C, growth in M2 and M3 for the next three months is expected to exceed the rate of expansion for the last three months. Nonetheless, reflecting the lagged effects of the recent increases in market interest rates, any pick-up in money growth is likely to be fairly limited, leaving the aggregates by June well down in or a little below the lower ends of their growth cones.